



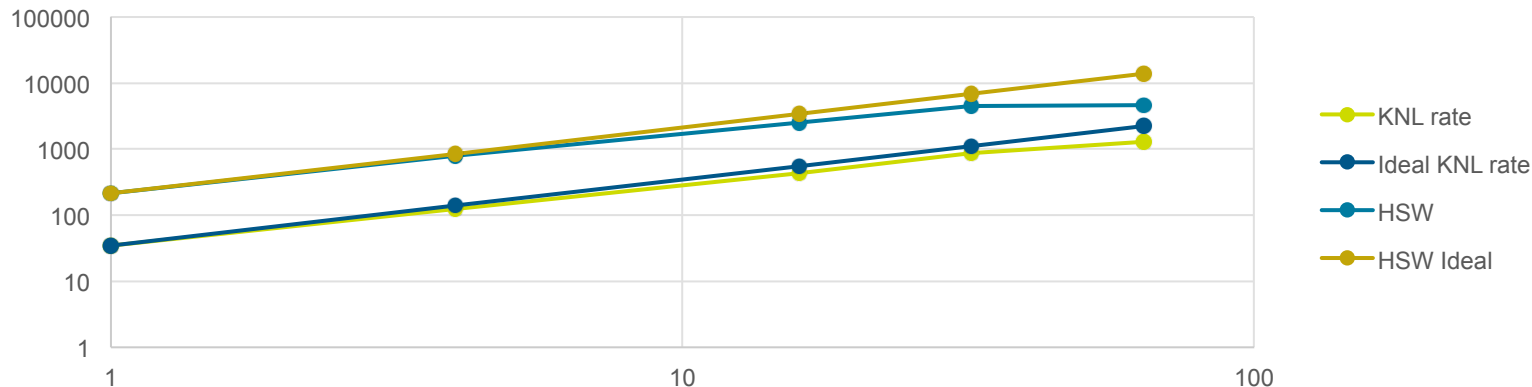
DESI spectral extraction

Performance analysis on KNL

Scaling on KNL

| KNL | | | HSW | | | |
|-------|--------|-------|-------|--------|---------|----------|
| time | rate | ideal | time | rate | ideal | |
| 289.6 | 34.5 | 34.5 | 46.8 | 213.4 | 213.4 | 6.188034 |
| 318.3 | 125.7 | 138 | 50.4 | 794 | 853.6 | 6.315476 |
| 374.6 | 427.1 | 552 | 63.9 | 2502.6 | 3414.4 | 5.862285 |
| 373.3 | 857.2 | 1104 | 70.5 | 4537.7 | 6828.8 | 5.295035 |
| 495 | 1292.9 | 2208 | 140.1 | 4567.5 | 13657.6 | 3.533191 |

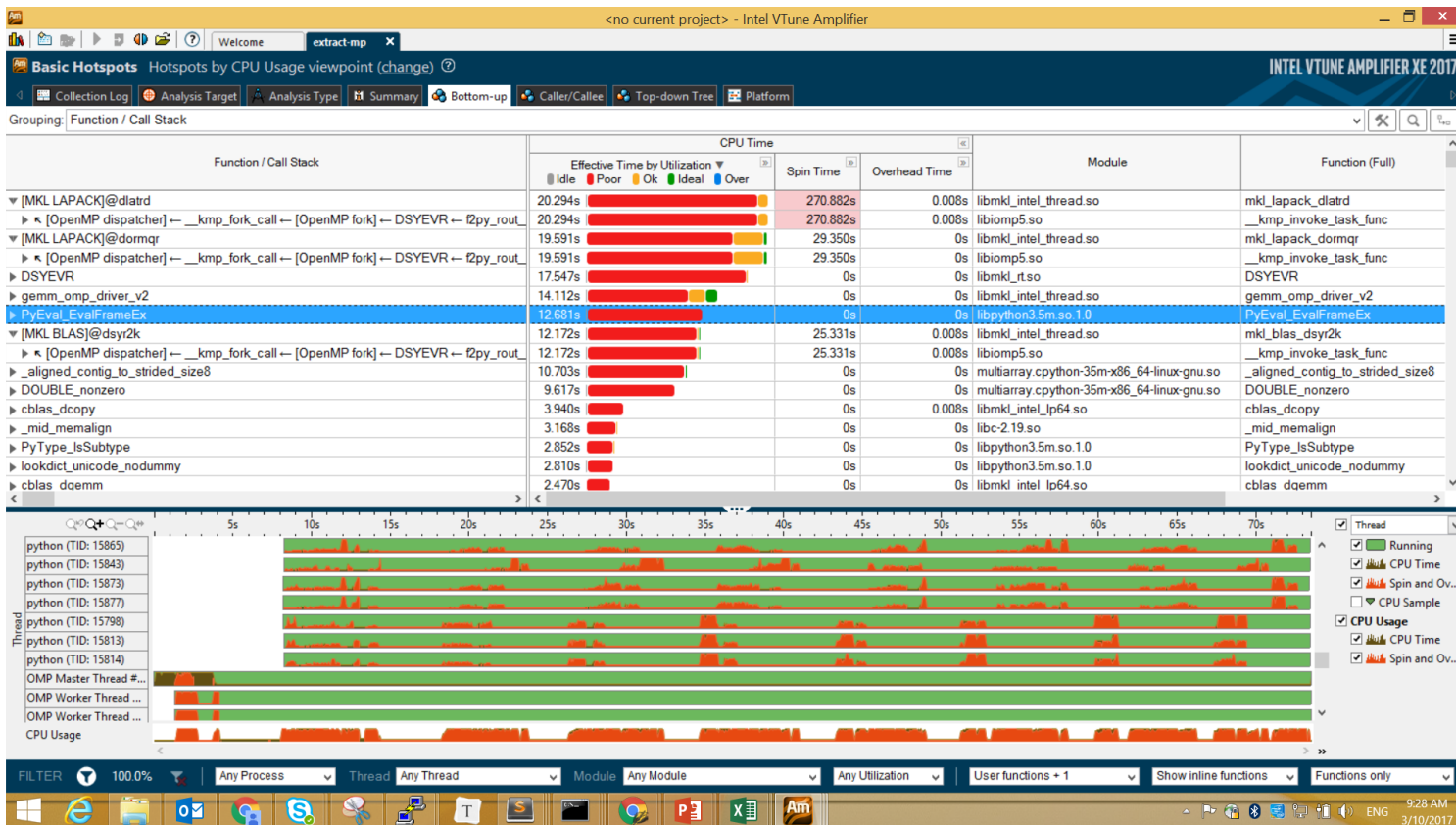
| HSW | | |
|--|--|--|
| Intel(R) Xeon(R) CPU E5-2698 v3 @ 2.30GHz | | |
| 2x16 cores | | |
| KNL (KMP_AFFINITY=disabled) | | |
| Intel(R) Xeon Phi(TM) CPU 7210 @000000 1.30GHz | | |
| 1x256 cores (64x4 HT) | | |



scipy.linalg.eigh

- CBLAS_DSYMV

Haswell

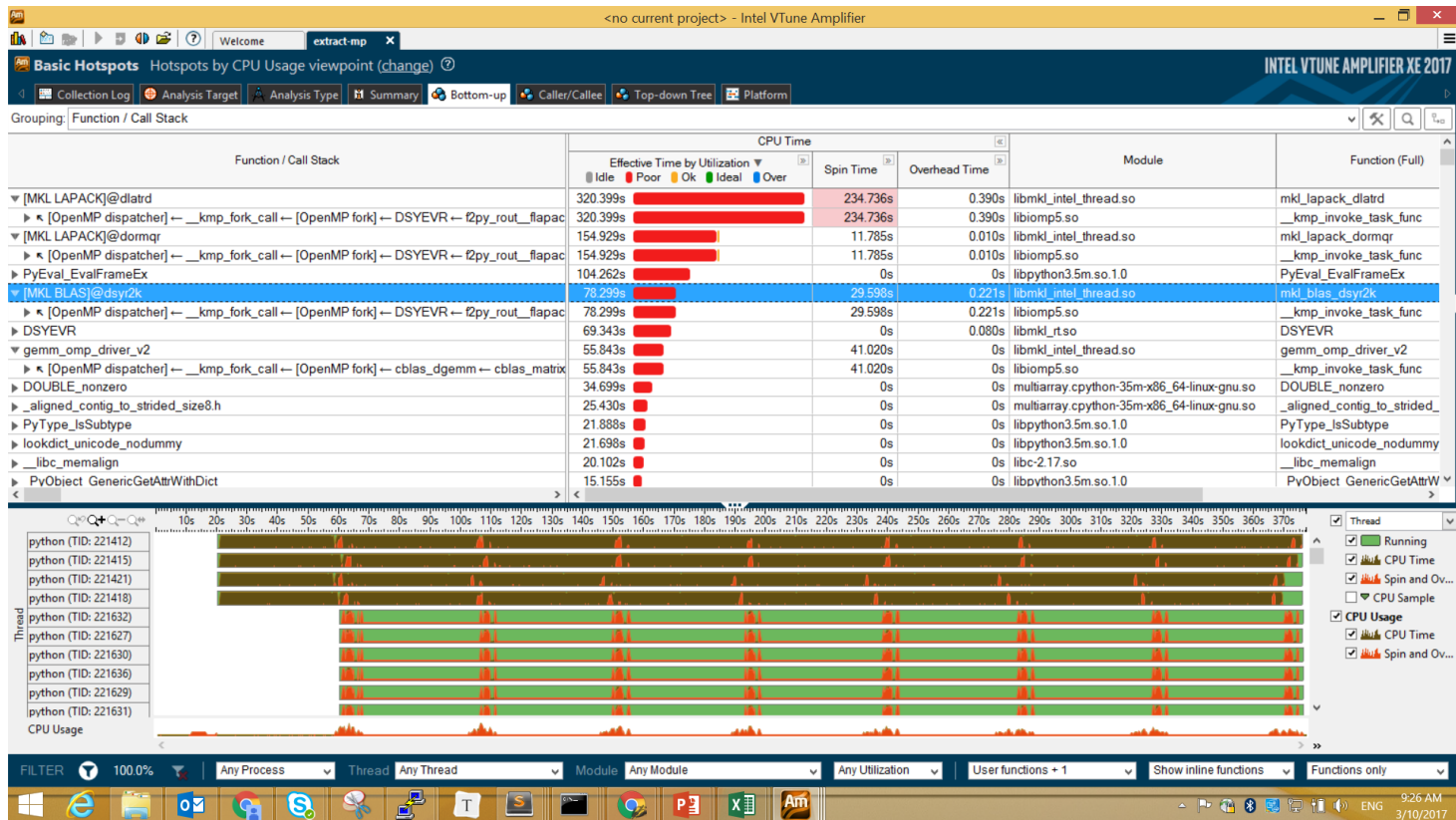


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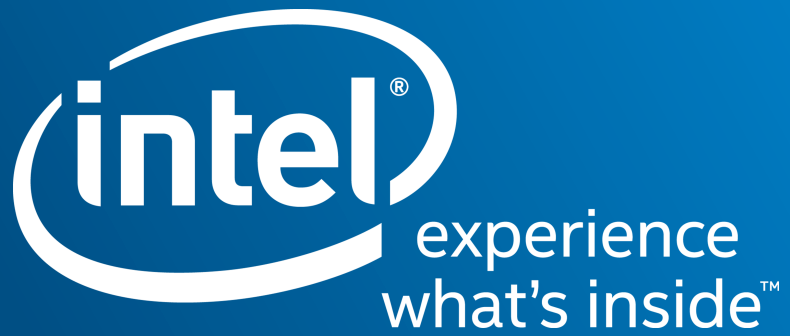
cProfile, 1 process

```
E
Mon Mar 6 10:20:17 2017 ctime.txt
2059343 function calls (1994240 primitive calls) in 342.079 seconds

Ordered by: internal time

ncalls  tottime  percall  cumtime  percall  Filename:lineno(function)
6      321.074  53.512  321.074  53.512  {built-in method posix.read}
1      4.888    4.888    4.888    4.888  [method 'normal' of 'mtrand.RandomState' objects]
10455   1.513     0.000    1.676    0.000  /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/polynomial/legendre.py:898(legval)
217344/174616 0.737 0.000 0.954 0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/core/records.py:432(__getattrute__)
503     0.533     0.001    0.568    0.001 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/polynomial/legendre.py:1215(legvander)
215208   0.410     0.000    0.719    0.000  {built-in method builtins.isinstance}
7080    0.292     0.000    2.181    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/io/fits/fitsrec.py:677(field)
600     0.292     0.000    0.292    0.000  {built-in method marshal.loads}
14      0.283     0.020    0.287    0.020  [method 'get_filename' of 'zipimport.zipimporter' objects]
107     0.276     0.003    1.857    0.017 /localdisk/work/dnagorny/ncrcs1/specter/py/specter/psf/gausshermite.py:121(_xypix)
14/1     0.270     0.019    0.936    0.956  [method 'load_module' of 'zipimport.zipimporter' objects]
863/1    0.268     0.000  342.094  342.094 {built-in method builtins.exec}
1006     0.266     0.000    0.266    0.000 {built-in method numpy.linalg.lapack_lite.dgelsd}
34117   0.245     0.000    0.245    0.000 {built-in method numpy.core.multiarray.array}
1498    0.238     0.000    0.288    0.000 /localdisk/work/dnagorny/ncrcs1/specter/py/specter/psf/gausshermite.py:92(_pgh)
2971/2941 0.234     0.000    1.047    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/units/core.py:2056(_expand_and_gather)
503     0.220     0.000    1.524    0.003 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/polynomial/legendre.py:1398(legfit)
5244    0.219     0.000    0.302    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/core/numeric.py:1015(outer)
1955/1946 0.179     0.000    0.876    0.000 {built-in method builtins.__build_class__}
88494   0.177     0.000    0.245    0.000 {built-in method builtins.getattr}
2539    0.176     0.000    0.182    0.000 /localdisk/work/dnagorny/ncrcs1/specter/py/specter/util/util.py:224(gaussint)
4322    0.166     0.000    0.166    0.000 [method 'reduce' of 'numpy.ufunc' objects]
7080    0.158     0.000    2.606    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/io/fits/fitsrec.py:65(__getitem__)
2539    0.156     0.000    0.366    0.000 /localdisk/work/dnagorny/ncrcs1/specter/py/specter/util/util.py:231(gausspix)
26352   0.151     0.000    0.288    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/abc.py:178(__instancecheck__)
96/73   0.150     0.002    0.350    0.005 {built-in method imp.create_dynamic}
10788   0.146     0.000    0.189    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/units/core.py:727(__hash__)
298     0.142     0.000    0.321    0.001 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/scipy/misc/doccer.py:12(docformat)
7084    0.140     0.000    0.652    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/core/records.py:544(field)
3369    0.137     0.000    0.137    0.000 {built-in method posix.stat}
503     0.134     0.000    0.651    0.001 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/linalg/linalg.py:1785(lstsq)
33596   0.131     0.000    0.131    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/_weakrefset.py:70(__contains__)
1      0.123     0.123    5.978    5.978 /localdisk/work/dnagorny/ncrcs1/specter/py/specter/psf/gausshermite.py:26(__init__)
3600    0.121     0.000    0.403    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/io/fits/fitsrec.py:870(_convert_other)
10680   0.120     0.000    0.180    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/io/fits/fitsrec.py:635(names)
6953    0.116     0.000    0.233    0.000 /localdisk/work/dnagorny/ncrcs1/specter/py/specter/util/tracecet.py:27(_xnorm)
14902/14091 0.108 0.000 0.142 0.000 [method 'format' of 'str' objects]
3600    0.106     0.000    0.306    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/astropy/io/fits/fitsrec.py:727(_cache_field)
7099    0.105     0.000    0.148    0.000 /localdisk/work/dnagorny/miniconda3/envs/knltest/lib/python3.5/site-packages/numpy/core/records.py:466(_setattr__)

0:ssh* 1 bash 2 vimM 3 bash 4 bash 5 bash 6 ssh- 7 bash 09/03 08:41:03
```



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